

advance reached its maximum about 17,000 to 18,000 years ago, the edge of the continent was about 40 km east of Cape Hatteras. The land surface sloped gently seaward and was dissected by rivers and associated tributaries with moderately deep channels and broad flood plains. Climate and vegetation were such that maximum surface water discharge and sediment erosion occurred (Whitehead 1981). The products of such an environment were the coarse sands and gravels deposited on the North Carolina Coastal Plain.

The present rise of sea level began sometime after 17,000 years before the present (ybp) when the climate began to warm and glacial ice masses receded. The sedimentary and physical character of the present sound system began to be defined at that time. As the climate continued to warm, the vegetation slowly evolved into the hardwood and pine forests that characterize the southeastern United States today. And, the estuarine system impinged landward across the continental shelf to its current position.

A major geomorphic feature known as the Suffolk Scarp, or the Arapahoe Ridge, trends north and south across the western portion of the A/P system and divides the area into two distinct geomorphic provinces. This prominent sand ridge rises to 6 to 9 meters of elevation and represents an old barrier island shoreline formed by the sea during a previous Pleistocene interglacial period when sea level was higher than it is now. West of the Arapahoe Ridge, the terrain gently rises to the Piedmont. To the east lies the Pamlico Terrace, which has a low, flat surface sloping from 3 to 5 meters of elevation at the base of the scarp eastward to 0.3 to 0.6 meters of elevation at the end of the land peninsula. This geologic setting has resulted in low, poorly drained land with extensive swamps and pocosins composed of organic peat soils that generally thicken eastward.

B. 3. Climate and Land

The climate in the area of the Albemarle-Pamlico estuarine system is moderately mild and moist, creating a good environment for agriculture, forestry, and fisheries. Northeastern North Carolina and southeastern Virginia generally receive between 47 and 56 inches (120 and 142 cm) of rain per year, though spatial and temporal variation are great (Wilder et al. 1978). Dry years average about 35 inches (89 cm) and in wet years may reach 78 inches (200 cm) of rainfall. Seasonal distribution of precipitation is relatively uniform, with the highest precipitation occurring in association with thunderstorms in the summer and the lowest occurring during fall and spring. Temperature is moderate. January temperatures average between 6 and 8 °C (43 and 46 °F); the low seldom falls below -12 °C (10 °F). Summers are hot and humid, with the average daytime temperature often exceeding 32 °C (90 °F) in July and August. Although winds are variable, the prevailing winds are from the S-SW with average velocities of 9 to 10 mph (15 to 16 km/hr) (Clay et al. 1975). Special situations arise with northern winds of high velocities (most common in the winter), and localized thunderstorms, hurricanes, and tornadoes (most common during the spring, summer, and fall).

The area directly surrounding the Albemarle-Pamlico Estuarine System is heavily forested; in fact, about two-thirds of the land in the counties surrounding the sound system is in forest or under water (Table I-2). Land use studies indicate small urban areas and a generally rural setting. Land use changes in the area are primarily from forest to agricultural uses, not to urban development.